**Young International Scientists Say**

**China, Brazil Good Friends and Good Partners**

By GONG Qian

When Dr. Juan Carlos Mateus Sanchez, a researcher at Brazil's National Institute of Metrology, Quality and Technology (INMETRO), was selected as a young international scientist in 2019 to undertake research at a Chinese institution for 12 months, he immediately said yes.

"It was a great opportunity that I could not pass up," Dr. Sanchez told Science and Technology Daily (S&T Daily).

Over the past decades, as bilateral relations between China and Brazil have maintained steady growth, their sci-tech collaboration has become a model of South-South cooperation and played an important role in enhancing people-to-people exchanges and contributing to global sci-tech innovation.

**Learning from China's experience**

The National Institute of Metrology (NIM), China and INMETRO are both national metrology institutions. They develop and maintain national primary measurement standards and use them to ensure accuracy and reliability of measurement results. In 2017, NIM and INMETRO signed a new memorandum of understanding, identifying electromagnetic (EMC) as a priority topic, which enabled Dr. Sanchez to collaborate with his Chinese counterparts.

　　"China has given the right place of importance to metrology, realizing the huge impact that it has on the development of economy, industry and the society," Dr. Sanchez, the leader of the EMC laboratory of INMETRO, said.

During his stay at NIM in 2019, Sanchez compared the measurements of electric fields generated in different laboratories of China and Brazil by designing an E-field sensor probe, which he calls "the most important achievement".

　　The young scientist developed the sensor along with a team of Chinese researchers led by NIM's Dr. Meng Donglin, who was also his mentor. "At that time, a few people doubted whether we could make it, considering the technical challenges and limited research funding," Dr. Meng said.

　　Eventually, with a fund of 150,000 RMB and advanced equipment from NIM, they spent nearly eight months developing such a device involving three types of updates while collaborating with a Chinese manufacturer.

　　Based on their research, they co-authored a published paper and also put the device to use in Dr. Sanchez's lab, using it to establish the standard field strength between 80 MHz to 2 GHz in his home country, which filled a gap in metrological testing capabilities. The device provides accurate measurements for other laboratories in Brazil, improving product quality and promoting industrial development.

What's more, China and Brazil have mutually recognized measurements in this field, facilitating trade in mechanical and electrical products between them.

　　From finding common R&D demands, tailoring feasible cooperation plans, and imparting knowledge and skills to tracking the cooperation outcomes while involving enterprises, the sustainable cooperation between NIM and INMETRO provides a successful example for BRICS members and Global South countries, said Zhu Xiumei, project coordinator of International Cooperation Department at NIM.

**Close friends with mutual trust**

　　Dr. Sanchez is very thankful for his Chinese colleagues, especially Dr. Meng. "He is my personal friend and we are very close," Dr. Sanchez said. "He is patient and gave me all the support I needed."

When developing the sensor, Dr. Sanchez was new to the different measurement standard equipment in the laboratory and the experienced mentor helped him to use them.

　　Dr. Sanchez demonstrated his outstanding capabilities in literature search, communication and teamwork, Dr. Meng said. "Although we have different personalities at work, we are all genuinely committed to R&D collaboration. It is very crucial to build mutual trust and foster empathy in international cooperation."

　　Upon Dr. Sanchez's arrival in Beijing, his Chinese colleagues went out of their way to make him and his family adapt to their new life in Beijing smoothly. They helped him to rent an apartment, open a bank account, and buy daily necessities. They also taught Dr. Sanchez how to use mobile payment and ride-hailing apps.

　　In the early days of the COVID-19 pandemic, when there was a shortage of masks, one of his colleagues drove to his home to deliver them. "They called me every day to see if I need something and to check if I had any symptoms," Dr. Sanchez said.

　　He calls his experience in China valuable for his life and career. Even after returning to Brazil, Dr. Sanchez stayed in close touch with his Chinese friends, exploring academic issues while sharing personal lives. As an ancient Chinese poem goes, "If you have a friend afar who knows your heart, distance cannot keep you two apart."

**Broader cooperation in next 50 years**

　　Dr. Sanchez returned to NIM in 2023 and he is promoting further cooperation between NIM and INMETRO.

　　Over the past half century, the Brazil-China friendship has been continuously strengthened and cooperation has become increasingly diversified, Brazilian President Luiz Inácio Lula da Silva said in his congratulatory letter on the 50th anniversary of the establishment of diplomatic relations between China and Brazil in August 2023.

　　Brazil is the first developing country to cooperate with China in high-tech areas such as satellites. In 1988, the China-Brazil Earth Resources Satellite (CBERS) project was given priority and since then, the two countries have jointly developed six earth-resources satellites.

　　Data from these satellites supports the socio-economic development of China and Brazil and is widely applied in agriculture, forestry, water resources, land resources, environmental protection, and disaster prevention and mitigation.

　　Institutions such as the China-Brazil Center for Climate Change and Energy Technology Innovation, China-Brazil Joint Laboratory of Agricultural Sciences, and the China-Brazil Joint Laboratory for Space Weather are serving as important platforms to strengthen their sci-tech cooperation.

　　Political mutual trust, economic complementarity, and mutual learning in development serve as the cornerstone of the thriving China-Brazil relations, Song Junying, director of the Department of Latin American and Caribbean Studies at the China Institute of International Studies, told S&T Daily. Now, both sides are seeking closer synergy between the Belt and Road Initiative and Brazil's reindustrialization strategy.

In the next 50 years of bilateral relations, the two sides will open up a new path together and build a bright shared future, Lula said.

*This column is written in cooperation with the China Science and Technology Exchange Center (CSTEC).*

**“国际青科说”系列报道**

**中国与巴西是好朋友好伙伴**

科技日报记者 龚茜

2019年，当巴西国家计量、质量和技术研究院（INMETRO）研究员胡安·卡洛斯·马特乌斯·桑切斯博士（Dr. Juan Carlos Mateus Sanchez）获得前往中国科研机构开展为期12个月研究的机会时，这位国际青年科学家毫不犹豫接受了邀请。

“这是一个宝贵机遇，我绝不能错过。”桑切斯博士在接受科技日报采访时如是说。

过去数十年间，随着中巴双边关系稳健前行，两国科技合作已然成为“南南合作”的典范，在促进人文交流、推动全球科技创新方面发挥着重要作用。

**汲取中国经验**

中国计量科学研究院（以下简称“中国计量院”）与INMETRO皆为国家级计量机构，致力于建立和维护国家基准测量标准，确保测量结果的准确性与可靠性。2017年，双方签署了新一轮合作备忘录，将电磁兼容（EMC）计量列为优先合作领域，这无疑为桑切斯博士与中国研究人员的携手合作筑牢了根基。

“中国高度重视计量科学的发展，深刻认识到其对经济、产业和社会发展的深远影响。”作为INMETRO电磁兼容实验室负责人的桑切斯博士感慨道。

2019年，在中国计量院访问期间，桑切斯博士通过设计一款电场探头，完成了中巴两国不同实验室场强的比对。他将此成果视作“最重要的成果”。

中国计量院研究员孟东林担任桑切斯的中方导师，他带领的团队与桑切斯博士共同完成了这项技术研发。孟东林回忆道：“当时技术难度大、经费有限，很少有人相信我们能成功。”

最终，依靠中国计量院提供的15万元资金和先进科研设备，研发团队与一家国内厂商开展合作，历经近八个月的不懈努力，完成了三次技术迭代，成功研制出这款场强传递标准器。

基于该研究，桑切斯与孟东林联合发表了一篇论文，并将这款标准器应用于桑切斯在巴西的实验室，利用它建立了巴西在80MHz~2GHz频段标准场强，填补了其在此频段计量测试能力的空白。如今，这款场强传递标准器为巴西多家实验室提供精准测量，助力其产品质量提升与产业发展。

值得一提的是，中巴实现了两国电磁兼容领域的计量互认，为两国机电产品的贸易便利化提供了重要技术支持。

中国计量院国际合作部协调人朱秀梅指出，从找准研发需求、定制合作方案，到知识共享、成果转化与企业对接，中国计量院与INMETRO之间的可持续合作模式为金砖国家和“全球南方”树立了成功典范。

**互信互助的亲密伙伴**

桑切斯博士对中国同事，尤其是孟东林博士满怀感激之情。“孟东林博士是我私下的好友，我们关系非常亲密。他十分耐心，为我提供了研究所需的一切支持。”桑切斯博士说道。

在研发标准器过程中，桑切斯博士对中国计量院实验室里不同的测量标准设备不太熟悉，这位经验丰富的导师便会亲自指导他操作。

孟东林表示，桑切斯博士在文献检索、沟通协调和团队合作方面表现突出。“尽管我们在工作中性格各异，但都会全力以赴投入到研发合作。在国际合作里，建立互信和培养同理心至关重要。”

初到北京时，桑切斯博士的中方同事尽力帮助他及其家人适应新生活，比如协助租房、开设银行账户、购买日用品，还教他使用移动支付和打车软件等。

新冠疫情初期，口罩极度短缺，一位中方同事专程驾车将口罩送到他家。“我的同事们每天都会打电话关心我的需求和健康状况。”桑切斯博士回忆道。

他将这段经历视为“人生与职业生涯一笔珍贵财富”。即便回到巴西后，桑切斯博士仍与他的中国朋友们保持密切联络，一同探讨学术问题，分享日常生活点滴。正如中国古诗所言：“海内存知己，天涯若比邻。”

**未来50年中巴拥有更广阔的合作图景**

2023年，桑切斯博士再次回到中国计量院访问学习，并积极致力于推动中国计量院与INMETRO开展更为深入的合作。

巴西总统卢拉在致中巴建交50周年的贺电中表示：“半个世纪以来，巴中友谊不断加强，合作日益多元。”

巴西是第一个同中国开展卫星等高新技术合作的发展中国家。1988年，中巴地球资源卫星（CBERS）项目启动，此后两国联合研制了六颗地球资源卫星。

这些卫星数据广泛应用于农业、林业、水资源、国土资源、环境保护以及防灾减灾等领域，有力推动了中巴两国社会经济发展。

中国—巴西气候变化与能源技术创新研究中心、中国—巴西农业科学联合实验室、中国—巴西空间天气联合实验室等为两国强化科技合作搭建了重要平台。

中国国际问题研究院拉美和加勒比研究所所长宋均营在接受科技日报采访时表示，政治互信、经济互补、发展经验互鉴是中巴关系蓬勃发展的坚实基础。当前，双方正致力于推动共建“一带一路”倡议与巴西“再工业化”战略实现紧密对接。

卢拉在贺电中表示，两国关系的下一个50年，双方将并肩开辟新道路，构建命运与共的光明未来。

*（该栏目与中国科学技术交流中心合作完成。）*